

# 慶北地方의 벼 乾沓直播 主要 栽培法에 關한 研究

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## Studies on Major Cultivation Methods for Dry Direct Seeding of Rice in Gyeongbuk District

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### < 實驗目的 >

벼 乾沓直播 栽培時 播種方法, 播種限界期, 施肥量 및 施肥方法, 栽培樣式間 省力化 등을 究明하여 安定된 벼 直播栽培 技術을 確立코자함.

### < 材料 및 方法 >

本實驗은 1988年 부터 1991年 까지 3年間 慶尙北道 農村振興院 水稻圃場에서 播種方法 實驗은 東津벼를 供試하여 湛水 直播, 乾沓平面廣散播, 乾沓畦立廣散播, 乾沓條播로 5月 1日 播種하여 亂塊法 3反復으로 實施하였고, 播種 限界期 究明 實驗은 金烏벼, 東津벼, 密陽 95號를 供試하여 播種期를 4月 25日, 5月 10日, 5月 25日, 6月 10日, 6月 20日로 하고 機械移秧(6月 15日)를 對照區로 하여 分割區配置 3反復으로 實施하였으며, 窒素施肥量 및 窒素施肥方法實驗은 普通沓에서 東津벼를 供試하여 窒素施肥量을 12, 15, 18(kg/10a)를 主區로 하고 窒素施肥方法 10-40-20-20-10%, 20-30-20-20-10%, 30-20-20-20-10%를 細區로 5月 1日에 播種하여 分割區配置 3反復으로 實施하였고, 栽培樣式間 省力化 比較實驗은 花珍벼를 供試하여 栽培樣式을 慣行移秧(40日苗), 機械移秧(30日苗), 어린모 機械移秧(8日苗), 乾沓條播로 하여 播種育苗로 부터 收穫乾燥에 이르기 까지 栽培樣式間에 省力化 程度를 調查하였다.

### < 實驗結果 및 考察 >

1. 벼 直播栽培 播種方法間에는 湛水直播는 倒伏에 弱하여 不利하였고, 乾沓直播는 穗數確保와 倒伏이 안되어 有利하였으나 乾沓散播보다는 乾沓條播하는 것이 波狀群落을 形成게하여 收量生産에 有利하였다.
2. 出穗期로 본 乾沓直播 播種限界期는 金烏벼 6月 10日, 東津벼 5月 25日, 密陽 95號 5月 25日 이었다.
3. 乾沓直播 栽培時 窒素施肥 適量은 12.1kg/10a이었고, 窒素施肥方法은 20-30-20-20-10%(基肥:5葉期:7葉期:穗肥, 實肥)가 좋았다.
4. 栽培樣式別 10a當 所要 勞動力은 손移秧 65.1時間, 中苗機械移秧 32.7時間, 어린모機械移秧 28.9時間, 乾沓條播 25.3時間으로서 直播栽培의 勞力節減 效果는 中苗機械移秧에 對比하여 約 23%이었다.
5. 벼 乾沓直播栽培의 實用化를 위해서는 耐倒伏性 品種의 育성과 雜草防除體系에 關한 研究가 並行되어야 할 것으로 생각된다.

Table 1. Change of yield components and yield in association with seeding methods.

Seeding methods	Heading date	Culm length (cm)	No. of panicle per m <sup>2</sup>	No. of spikelets per plant	Filled grain ratio (%)	1,000 grain weight (g)	Milled rice yield (kg/10a)	Yield index
Submerged direct sowing	Aug.15	86	467	70	81.5	22.4	463	100
Plane drilling in dry paddy	Aug.18	85	418	70	86.5	22.8	486	105
Tractor rotary after seeding	Aug.18	84	445	73	86.5	22.7	477	103
Broadcasting on high ridge	Aug.19	85	391	71	86.5	22.8	472	102

Table 2. Milled rice yield in association with seeding dates.

Seeding date	Milled rice yield (kg/10a)			
	Keumhobyeo	Donghaebyeo	Milyang #95	Mean
April 25	408 (97)	527 (116)	541 (114)	492 a*
May 10	385 (92)	460 (101)	496 (104)	447 b
May 25	393 (94)	484 (106)	479 (101)	452 b
June 10	411 (98)	471 (104)	430 (91)	437 b
June 20	369 (88)	393 (86)	331 (70)	364 c
June 15**	419 (100)	455 (100)	475 (100)	450 b
Mean	398 b*	465 a	459 a	—

\* Same characters are not significantly different at 5% level by D.M.R.T.

\*\* Machine transplanting date.

Table 3. Comparison of milled rice yield among nitrogen application methods.

Nitrogen application (%)						Milled rice yield (kg/10a)					
Basal	5th leaf stage	7th leaf stage	Panicle stage	Heading stage		Nitrogen application rate (kg/10a)					
						12	15	18	Mean		
10	40	20	-	20	-	10	472 a*	476 ab	439 c	462 b	
							(100)	(101)	(93)	(99)	
20	-	30	-	20	-	20	479 ab	486 abc	452 c	472 ab	
							(101)	(103)	(96)	(101)	
30	-	20	-	20	-	10	465 bc	485 abc	456 c	459 b	
							(99)	(103)	(97)	(100)	
							Mean	472	482	449	468
							(100)	(103)	(96)	(100)	

\* In a column in each nitrogen level, means followed by a common letter are not significantly different at the 5% level by D.M.R.T.

Table 4. Comparison estimate of saving labour among rice cultivation methods.

Cultivation methods	Required labour per each farming operations stage (hour/10a)							Total
	Sowing and raising seedling	Tillage	Transplanting	Fertilizer application	Weeding	Control of disease and pest	Harvesting and drying	
Hand transplanting	9.1	4.1	32.3	1.7	2.4	6.6	8.9	65.1
Machine transplanting	7.2	4.1	1.8	1.7	2.4	6.6	8.9	32.7
Young seedling machine transplanting	4.0	4.1	1.2	1.7	2.4	6.6	8.9	28.9
Plane drilling in dry paddy	1.2	3.7	-	1.6	2.8	7.1	8.9	25.3